

POTENTIAL MARKET FOR NATURAL GAS
ALONG THE SAINT JOHN RIVER VALLEY

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Phase II Includes

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Potential Market for Natural Gas

Along the Saint John River Valley

1. Introduction

At the request of the Energy Branch, Department of Natural Resources and Energy (DNRE), Neill and Gunter Limited conducted a brief review and assessment of the potential market for natural gas use in the Saint John River Valley between Edmundston and Saint John. The survey dealt with the industrial and large institutional sectors and included estimates of load factors.

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Potential Market for Natural GasAlong the Saint John River Valley2. Methodology.1 People Contacted

In carrying out the survey, Neill and Gunter Limited updated a list of industrial and large institutional energy users along the Saint John River Valley provided by DNRE and contacted them individually with the exception of the Irving Mills. The people contacted at each company were either the senior operating engineer in charge of the steam plant, the plant manager or the steam plant superintendent. In the large institutional sector, the people contacted were the Associate Vice President of Administration and Campus Planning for the Physical Plant at UNB, the Chief Operating Engineer for the heating plant at C.F.B. Gaagetown and the Project Manager of the Hospital Division, Department Supply and Services for the hospitals.

.2 Information Requested

The information requested was generally: the type (s) of fuel used, the annual consumption of each fuel, the efficiency(ies) and rated capacity(ies) of their boiler(s) and a forecast of any change in the annual fuel consumption by the year 1995 and beyond.

.3 Load Factor

Due to the brevity of the survey, individuals contacted did not have time to source information which would predict their load factor accurately. Thus the load factors listed are either estimates provided by the individuals contacted or are typical for the industry or institution involved.

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Potential Market for Natural GasAlong the Saint John River Valley3. Results.1 Annual Fuel Consumption

All those contacted provided fuel consumption data for the year 1990 with the exception of Lantic Sugar which provided 1988 data. The majority quoted their total fuel consumption for the year whereas one quoted average monthly consumption and another quoted average daily consumption. The consumption data for the Physical Plant at UNB was stated as lbs. of steam produced per year with an estimate of the percentages produced by wood and oil.

In the case of the Irving Mills, the annual consumption of purchased fuel was estimated using published production figures and applying typical energy vs. production figures for the type of mill involved. The estimated fuel consumption figures for the Irving Paper Ltd. Mill in Saint John (formerly Rothesay Paper Ltd.) and the J.D. Irving Ltd. Sawmill in St. Leonard were not included in this survey due to a lack of information.

Table 1 on the following page lists the potential annual consumption of natural gas for industries and large institutions in the Saint John River Valley. These figures are based on the equivalent energy of the fuels consumed. Table 2 lists the assumptions used in the calculations.

.2 Projected Consumption

The majority of respondents predicted little or no change in their fuel consumption in the foreseeable future. Fraser Inc. said they are studying the possibility of adding another hog fuel boiler to their operation in the future which would reduce their oil consumption.

C.F.B. Gagetown predicted their annual coal consumption would increase by 15-20% following the opening of a new combat training facility later this year. Humpty Dumpty predicted an annual increase in their oil consumption of 10% per year based on projected increased production.

TABLE 1

Potential Market for Natural Gas
by Industrial & Large Institutional Energy Users
Along the Saint John River Valley

		ANNUAL CONSUMPTION OF NATURAL GAS - MCMY (MCFY)		LOAD FACTOR
		A	B	
EDMUNDSTON	- FRASER INC.	117.0 (4131)	24 (855)	77%
	- EDMUNDSTON HOSPITAL	2.1 (75)	1 (49)	35%
FLORENCEVILLE	- MCCAIN FOODS LTD.	13.6 (479)		55%
FREDERICTON	- UNIVERSITY OF NB PHYSICAL PLANT & DR. EVERETT CHALMERS HOSPITAL	5.1 (180)	8 (271)	30%
GRAND FALLS	- ACUMA PRESSWOOD PALLETS INC.		5 (160)	70%
	- CAVENDISH FARMS LTD.	9.4 (331)		55%
	- MCCAIN FOODS LTD.	8.3 (293)		55%
HARTLAND	- HUMPTY DUMPTY FOODS LTD.	2.5 (87)		
NACKAWIC	- ST. ANNE NACKAWIC P & P CO. LTD.	46.3 (1634)	45 (1605)	75% - 80%
OROMOCTO	- C.F.B. GAGETOWN	1.1 (39)	12* (431)*	30%
SAINT JOHN	- IRVING PULP & PAPER LTD.			
	- IRVING TISSUE LTD.	116.5 (4114)		75% - 80%
	- LABATTS N.B. BREWERY	1.7 (60)		
	- LANTIC SUGAR LTD.	25.9 (915)		
	- MOOSEHEAD BREWERIES LTD.	4.1 (146)		
	- SAINT JOHN REGIONAL HOSPITAL	1.8 (65)		35%
	- ST. JOSEPH'S HOSPITAL	1.4 (50)		35%
TOTAL		357 (12599)	95 (3372)	72%**

A - Volume of natural gas equivalent in terms of energy to the sum of heavy oil (#6), light oil (#2) and propane consumed per year.

B - Volume of natural gas equivalent, in terms of energy, to the hog fuel or the coal consumed per year.

* Coal

Weighted Average

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Potential Market for Natural GasAlong the Saint John River ValleyTABLE 2Assumptions

<u>Fuel</u>	<u>Heating Values</u>		<u>Boiler Efficiencies (Where Not Known)</u>
	<u>Metric Units</u>	<u>Imperial Units</u>	
Heavy Oil (#6)	41,830 KJ/Litre	180,000 BTU/Imp. Gal.	83%
Light Oil (#2)	38,810 KJ/Litre	167,000 BTU/Imp. Gal	83%
Propane	27,190,000 KJ/m ³	730,100 BTU/cu. ft.	80%
Natural Gas	37,240 KJ/m ³	1,000 BTU/cu. ft.	80%
Coal*	33,894,000 KJ/Tonne	29,140,000 BTU/Ton	84.8%
Hog Fuel (50% M.C. Wet Basis)	9,305,000 KJ/Tonne	8,000,000 BTU/Ton	65%

Units:

MCMY = Million Cubic Meters per Year

MCFY = Million Cubic Feet per Year

* Coal Heating Valve and Boiler Efficiency at C.F.B. Gagetown Heating Plant

POTENTIAL MARKET FOR NATURAL GAS
IN NEW BRUNSWICK - PHASE II

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AUGUST 9, 1991

FILE: 5168/1

NEILL AND GUNTER LIMITED

Potential Market for Natural Gas

In New Brunswick - Phase II

1. Introduction

At the request of the Energy Division, Department of Natural Resources and Energy (DNRE), Neill and Gunter Limited conducted the second phase of a market study into the use of natural gas in the province. The first phase of the study was performed by Neill and Gunter Limited in April 1991 and dealt with the industrial and large institutional energy users along the Saint John River Valley (from Edmundston to Saint John). This phase dealt with energy users in the same sectors located in close proximity of two potential pipeline routes between the Quebec/New Brunswick border and the New Brunswick/Nova Scotia border. Estimates of load factors were also included.

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Potential Market for Natural Gas
In New Brunswick - Phase II

2. Methodology

2.1 People Contacted

In carrying out this second phase of the natural gas market study, Neill and Gunter Limited compiled a list of industrial and large institutional energy users in close proximity of two proposed pipeline routes linking Quebec to Nova Scotia, excluding those along the Saint John River Valley and contacted them individually. The people contacted at each company were either the senior operating engineer in charge of the steam plant, the manager of operations or the steam plant superintendent. One exception was Brunswick Mining and Smelting Corp. in Belledune for which the information was extracted from a recent energy audit report.

In the large institutional sector, the people contacted were the Chief Operating Engineer at C.F.B. Chatham, a representative at the Hospital Division of the Department of Supply and Services for the hospitals, the Vice President of Administration for the University of Moncton and the Director of the Physical Plant for Mount Allison University.

2.2 Information Requested

The information requested was generally:

- (a) The type(s) of fuel consumed;
- (b) The annual consumption of each fuel;
- (c) The efficiency(ies) of their boiler(s);
- (d) The peak monthly fuel consumption;
- (e) The hours/day and days/year of plant operation;
- (f) A forecast of any change in the annual fuel consumption by the year 1995 and beyond.

2.3 Load Factor

Where the information was available, the load factors were calculated using this simple formula:

$$\text{Load Factor (\%)} = \frac{\text{Annual Fuel Consumption}}{\text{Peak Monthly Consumption} \times 12} \times 100$$

The results were then adjusted based on the hours of operation per year of the industry involved. Where the above information was not available, load factors were either estimates provided by the individuals contacted or are typical for the industry or institution involved.

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Potential Market for Natural GasIn New Brunswick - Phase II3. Results3.1 Annual Fuel Consumption

All those contacted provided fuel consumption data for either the 1989 or 1990 calendar years or the total for the last 12 months (August 1990 to July 1991). Table 1 on the following page lists the potential annual consumption of natural gas for the industries and large institutions which were contacted. These figures are based on the equivalent volume of natural gas in terms of energy to the quantity of fuel(s) actually consumed. Table 2 lists the assumptions used in these calculations.

3.2 Projected Consumption

The majority of respondents predicted little or no change in their fuel consumption in the foreseeable future. Exceptions were the following:

- Brunswick Mining and Smelting Corp. in Bathurst, C.F.B. Chatham and Mount Allison University all predicted a reduction of 10% in fuel consumption over the next 5 years resulting from efforts to increase energy efficiency;
- Havelock Lime predicted an increase in oil consumption of 70% within the next 5 years as a result of new driers coming on line.

TABLE 1

Potential Market for Natural Gas
by Industrial and Large Institutional Energy Users
in New Brunswick - Phase II

		EQUIVALENT ANNUAL CONSUMPTION OF NATURAL GAS - MMm ³ (MMCF)				
		Petroleum Prod.*		Hog Fuel**		LOAD FACTOR
Atholville	- Atholville Pulp Inc.	14.2	(501)	19.2	(678)	67%
Bathurst	- Brunswick Mining & Smelting Corp.	32.4	(1144)	-		71%
	- Stone Consolidated	17.8	(630)	58.5	(2064)	77%
Belledune	- Brunswick Mining & Smelting Corp.	9.0	(316)	-		57%
Chatham	- CFB Chatham	3.2	(112)	-		30-35%
	- Norboard Atlantic	5.0	(178)	-		70%
Dalhousie	- N.B.I.P.	104.0	(3676)	46.9	(1656)	70%
Havelock	- Havelock Lime	8.4	(296)	-		90%
Moncton	- City Hospital & Dumont Hospital	6.0	(212)	-		30-35%
	- University of Moncton	2.4	(84)	-		30-35%
Newcastle	- Miramichi Pulp & Paper	116.8	(4123)	47.6	(1680)	80%
Sackville	- Mount Allison University	2.6	(93)	-		30-35%
Sussex	- PCA	18.3	(645)	-		85-90%
	- Potocan	20.1	(709)	-		82%
TOTAL		360.2	(12,719)	172.2	(6,078)	74%***

Notes: MMm³ = Million cubic meters

MMCF = Million cubic feet

* Volume of natural gas equivalent in terms of energy to the sum of heavy oil (#6), light oil (#2) and propane consumed per year

** Volume of natural gas equivalent in terms of energy to quantity of hog fuel consumed per year

*** Weighted average (petroleum products)

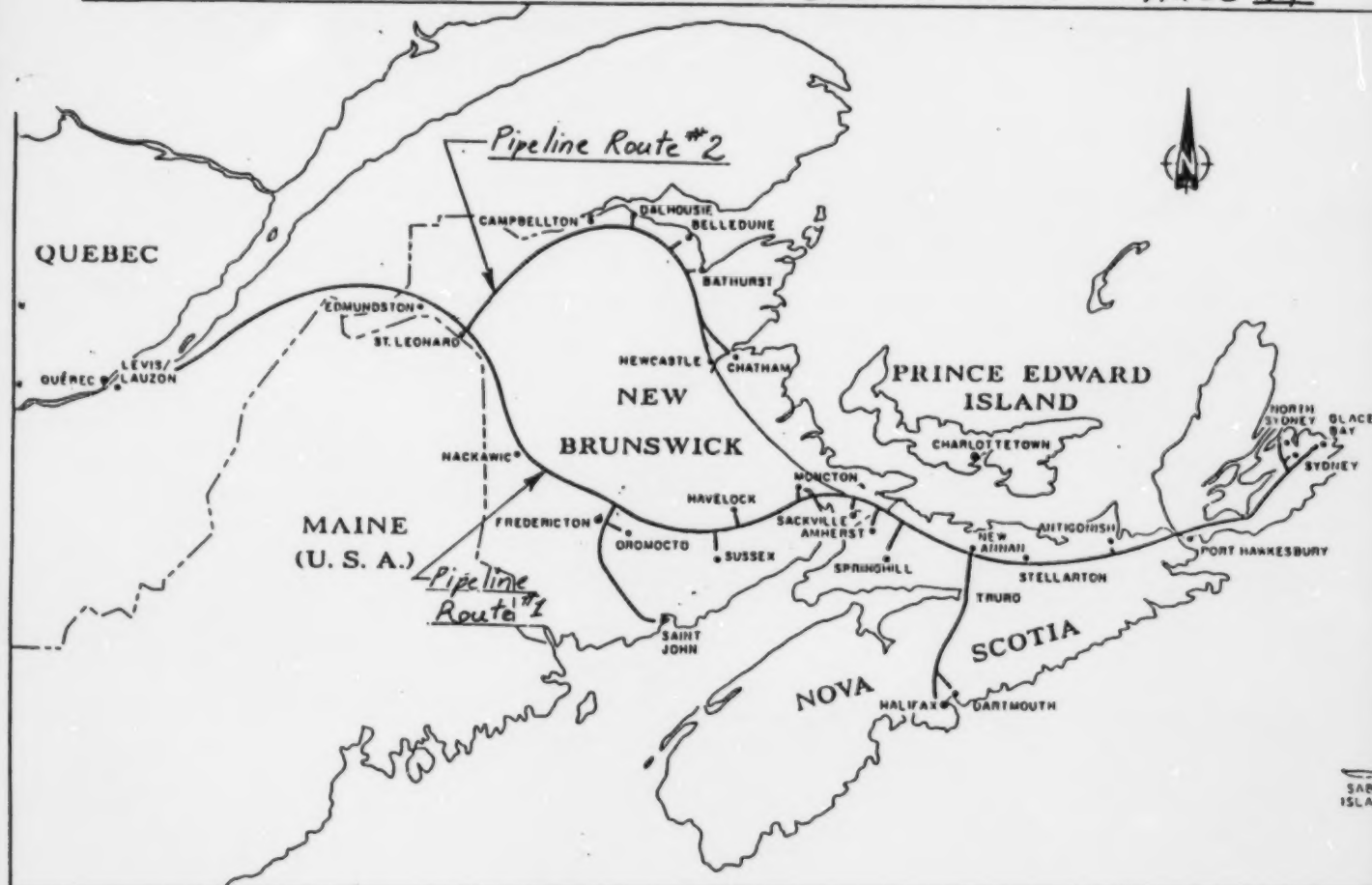
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Potential Market for Natural Gas
in New Brunswick - Phase II

TABLE 2

Assumptions

Fuel	Heating Values		Boiler Efficiencies (Where Not Known)
	Metric Units	Imperial Units	
Heavy Oil (#6)	41,830 KJ/Litre	180,000 BTU/Imp. Gal.	83%
Light Oil (#2)	38,810 KJ/Litre	167,000 BTU/Imp. Gal	83%
Propane	27,190,000 KJ/m ³	730,100 BTU/cu. ft.	80%
Natural Gas	37,240 KJ/m ³	1,000 BTU/cu. ft.	80%
Hog Fuel (50% M.C. Wet Basis)	9,305,000 KJ/Tonne	8,000,000 BTU/Ton	65%

Potential Market for Natural Gas in N.B. - Phase II



	From Levis/Lauzon, PQ Km.	Line Length within New Brunswick
New Brunswick	195.5	0.0
Edmundston	219.3	23.8
St. Leonard	239.3	63.8
Grand Falls	280.8	85.3
Perth Andover	317.8	122.3
Florenceville	334.0	158.5
Hartland	372.0	176.5
Nackawic	403.0	207.5
Fredericton	445.1	249.6
Saint John	563.1	367.6
Sussex	531.4	355.9
Havelock	579.0	383.5
Moncton	619.6	424.1
Sackville	646.3	450.8
Nova Scotia	555.8	460.3
Campbellton	390.9	195.4
Belledune	455.3	259.8
Bathurst	489.3	293.8
Chatham	550.7	355.2
Newcastle	557.0	361.5

	From Levis/Lauzon, PQ Km.	Line Length within Nova Scotia
Amherst	664.3	8.5
Springhill	684.0	28.2
New Annan	736.6	80.8
Truro	774.3	118.5
Halifax	866.5	210.7
Stellarton	794.2	138.4
Antigonish	849.3	193.5
Port Hawkesbury	900.3	244.5
Sydney	1010.3	354.5
Glace Bay	1028.7	372.9

Reference: Construction Plan submitted by Trans Quebec and Maritimes Pipelines Inc.
Revised February, 1981